Here are a few examples of noise assessments that are incomplete, or use inappropriate or inaccurate calculations:

- Noise levels have only been addressed (incorrectly) for operational phase. Levels during construction must also be addressed, but are not.[274] G434-198
- Noise decibel levels should be cited as dB. dBA refers to broadband, A-weighted sound levels, which involve frequency-dependent weighting factors applied to airborne sound in accordance with human hearing sensitivity and are inappropriate here. G434-199

**Noise impacts on marine mammals**

Potential noise impacts on marine mammals are substantially greater than has been acknowledged in the DEIS/R, for a number of reasons. First, noise levels in water, where effects on marine mammals would be most significant, have barely been addressed; they've been noted, but not analyzed.

Second, the DEIS/R assumes a much lower probability of gray whale presence than the data suggests (see above, *Inaccurate Gray Whale migration routes*). This necessarily understates the potential impact (and suggests the possibility that impacts on other marine mammal species may be similarly understated).

Third, sound travels a much greater distance in water than in air,[275] and whales are known to be able to hear hundreds of miles underwater, and to be extremely sensitive to loud noises.[276] "[N]oise from ship engines may disturb marine mammal hearing and behavior patterns...."[277] So the noises emitted would have a significantly more widespread effect than is recognized in the DEIS/R. G434-200

Fourth, and relatedly, the Applicant misleadingly states that "[t]o compare noise levels in water to noise levels in air, one must subtract 26 dB from the noise level reference in water."[278] This is doubtless true at one specific close-range distance, but because sound waves travel in water further and more efficiently in water than they do in air, the difference in dBs between the two varies logarithmically over distance, not arithmetically. Not having acknowledged this, the DEIS/R cannot possibly have accurately assessed noise impacts on marine mammals.

---

274 See Matrix, at 25.

275 This is due to both the greater density of water, and to the existence of a "noise channel" present at the depth of thermoclines, where noises may be transferred over extreme distances; e.g., some whale species are known to hear for over 500 miles underwater.

276 See the recent research done by both the Navy and project opponents in regard to noise effects on marine mammals.

277 NRDC 2004, at 7.

278 Citing to : Understanding Ocean Acoustics. Acoustic Monitoring Project, NOAA Pacific Marine Environmental Laboratory. This report is available at http://oceanexplorer.noaa.gov/explorations/sound01/background/acoustics/acoustics.html (Matrix, at 27.)



G434-198
Section 4.14.4 includes an analysis of noise levels during construction.

G434-199
Section 4.14.1 has been updated with an explantion of how sound is measured and the appropriate units used to assess noise levels.

G434-200
Section 4.7.4 contains additional information on this topic.

Fifth, the DEIS/R limits its analysis of noise impacts to the range of human hearing, approximately 20 Hz to 20 kHz. But cetaceans (and presumably other sea creatures) are able to hear frequencies as low as 5 Hz – and many of the loudest sounds that would occur during construction and operation (e.g., vessels bumping fenders, heavy equipment being dropped on resonant metal decking, etc.) would likely contain a substantial amount of very-low-frequency energy. This conjunction of low frequency hearing and low frequency sounds is particularly significant, in that:

- Low frequency sounds travel substantially further underwater than high ones (and recall that some cetaceans can hear for hundreds of miles);
- Some cetacean communication depends heavily on low-frequency, long distance "moaning."

Thus, low-frequency sounds – below frequencies of human hearing – are of special concern. Without a more complete and accurate assessment of their impacts, the assessment remains substantially incomplete.

Other inadequately addressed noise effects on marine mammals include:

- Cetaceans: echo-location, feeding behavior, mating behavior, other psychological effects, and pain;
- Pinnipeds: feeding behavior, mating behavior, other psychological effects, and pain;

(Also, many other sea creatures rely on auditory cues during hunting and other behaviors. These should have been addressed.)

The Applicant was advised to consult, but did not, National Research Council, Ocean Noise and Marine Mammals. (Committee on Potential Impacts of Ambient Noise in the Ocean on Marine Mammals; 2003).[279]

**Proposed noise mitigation too vague**

Noise minimization and mitigation measures are not sufficiently specified, as implied in a recent comment made by an agency reviewer:

> "One way to minimize sound propagation underwater is to utilize bubble curtains or screens, which can strongly attenuate sound underwater (Gisiner 1998). According to Gisiner (1998), bubble screens can be effective at moderate and high frequencies and at some low frequencies (e.g., not effective at very low frequencies). A possible mitigation measure is to "ramp up" the source level to allow any marine mammals present in the area to move out as the sound increases (Gisiner

G434-200 cont'd

G434-201

279 Ocean Studies Board, Division on Earth and Life Studies, National Research Council. The National Academies Press, Washington, D.C., 208 p.



G434-201
Impacts BioMar-3 and BioMar-5 in Section 4.7.4 contain additional information on this topic.

1998). However, the effectiveness of ramping up is questionable, as this may potentially allow marine mammals to gradually adjust to sound levels that are actually harmful (Gisiner 1998). Monitoring protocol as discussed in MAR-a (see response to MMS-25) could also be utilized to mitigate for project noise levels. The applicant will consult with NOAA Fisheries, USFWS and CDFG to further discuss minimization and mitigation measures."[280] G434-201 cont'd

Note that bubble screens are "not effective at very low frequencies" – precisely the range in which mammal impacts could be most significant.

Moreover, no evaluation has been made of the potential for construction activities to cause quasi-seismic vibration of the seabed. When the PLEM is dropped into place, how much of physical shock might it cause to local benthic communities? Perhaps it would be negligible, but no one knows, including the Applicant. And what if it were dropped prematurely, by accident? G434-202

Is there any foreseeable case in which emplacement of the hardware (PLEM, pipelines, etc.) could produce a transient noise of greater amplitude than has been analyzed for typical scenarios? If so, what irreversible impacts might there be – on marine mammal hearing, for instance? No one knows.

The Scoping Application stated that "[t]he FSRU will have a minimum of four mechanical foghorns (Diaphones)."[281] I don't now find that addressed in the DEIS/R (perhaps I missed it). Has the foghorn system design changed? If not, What would be the effect on marine life, particularly seabirds and marine mammals? How often would the horns be audible from shore? Could they keep any onshore residents awake at night? G434-203

## AESTHETICS

4.4 PDF 365

### View Impacts

The DEIS/R significantly underestimates the number of residents from Oxnard to Eastern Malibu who would have unobstructed views of the FSRU.

It does this in part by understating the number annual days in which conditions of clear weather obtains. Based on 35 years of experience in the area, I can confidently state that the FSRU would be visible from Pt. Dume, for instance, over half of the time each year. In this regard, the visual "simulations" produced by the Applicant are unduly prejudicial. G434-204

In its assessments of view impact on many populations (e.g., commercial fishermen, boaters, motorists, etc.) the DEIS/R argues that the visual impact would be comparable to that of any of the tanker ships that pass by in the shipping lane. This omits a key psychological factor (and G434-205

280 Comment Matrix (at 277).
281 Scoping Appli., 2.5.9.



G434-202
Impact BioMar-2 in Section 4.7.4 addresses this topic.

G434-203
Foghorns are required safety and warning devices with specific safety and warning devices.

G434-204
The EIS/EIR uses data from a large database of weather data collected near Pt. Mugu (International Station Meteorological Climate Summary CD, Ver. 3.0, published in March 1995) over a period of 47 years from 1946 to 1993 (see Section 4.1.8.5).

G434-205
The issue of aesthetics is admittedly subjective and there is a wide range of opinion on how the aesthetics of the proposed Project may or may not affect different people, but people on the mainland would most likely be able to discern a very small, ship-like, stationary object on the horizon for about one-third of the year. Most of the time, minimal atmospheric haze near the horizon and/or other climatic conditions would obscure any view of the facility. See Section 4.4.4 specifically for aesthetic impacts on offshore boaters, for example.

"view" is all about psychology): people would *know* that the FSRU was a stationary, permanent feature on the seascape, unlike the tankers. For the many potentially impacted populations which the Applicant dismisses as being inured to such sights, I coin a colloquialism: "we wouldn't mind a visit, but we don't want it to live there."

G434-205 cont'd

The DEIS/R also misstates how much of the FSRU would be visible from particular elevations on shore. I'm not certain how it does this (I simply have not had time to figure out where it goes wrong), but I can say this much: The DEIS/R's discussion of the curvature of the earth would have it that from my home's elevation of 230 ft. I should not be able to see *any* of Santa Barbara Island, yet I can see virtually all of it from here, 45 miles away. The implication is that the DEIS/R significantly understates the number of homes in Malibu and elsewhere that would have substantial views of the FSRU.

G434-206

For my comments on the Scoping Draft I calculated that the majority of hillside homes in Malibu would have views of the FSRU. Consider that any homebuilder with a hillside lot in Malibu would do his or her best to site a house such that it has views of the ocean, and the sunset in particular. (See FIGURE 9.) For all these homes, the FSRU would situated more or less "center-stage" – especially at sunset, when it would first appear as a silhouette partially "eclipsing" the Winter sun, then at twilight it would appear as an industrial glow against the deepening colors of the sky.

**FIGURE 9: Conceptual View.** The majority of hillside Malibu residents would have unobstructed views of the FSRU. The blue dot represents its approximate location and width (though not its color or shape). On hazy days (like this one), it could be invisible; on clear days, quite visible; and it would compete with Winter Sunsets, shedding lighting on into the twilight. (This photo was taken from above Las Flores Mesa, at elevation ~500 ft.)





G434-206
Section 4.4.3 has been revised and includes additional information. Appendix F provides information on visibility calculations.

The presence of marine haze at the horizon would obscure the view for about two-thirds of the year, and under clear conditions, the FSRU would appear as a very small object at the horizon. See the discussion under Impact AES-2, "Alter Nightime Ocean Views".

Nighttime would be just as dramatic. The artificial light emitted by the FSRU, tankers and supporting vessels would appear in starker contrast against the dark sky than the vessels might appear in hazy daylight.

G434-206 cont'd

The DEIS/R presents an inaccurate assessment of the *apparent* size of the FSRU as seen from shore, as it focuses mainly on height not width, and omits discussion of the additional view impact presented by visiting tankers. To better gauge the width of the FSRU, consider several examples. On clear days, Santa Barbara Island appears to be "in the front yard" of properties all along Malibu. The island, 38.5 miles from Point Dume, has a visible profile (width) of 9/10 mile; in comparison, the 1,000+ meter length (2/3 mile) of the FSRU and a moored tanker, ~15 miles from Point Dume, would be nearly *double* the apparent width of the island[282] – and with an industrial character rather than a natural one.

G434-207

Alternatively, a comparison of the apparent profiles of Anacapa Island and the facility from the vantage of Mugu Rock (a popular "scenic view" turnout on Highway 1) is also dramatic. Anacapa, 20 miles distant,[283] presents a visible width of 9/10 mile; The FSRU (and a moored tanker), 14.6 miles distant, would present a visible width of 2/3 mile; here, the facility would appear to be exactly the same width as the island.[284] The EIS/EIR analysts are encouraged to visit Pt. Dume and Mugu Rock on a clear day and look out at these islands with the noted comparisons in mind.

G434-208

In addition, the viewsheds of numerous State Parks would be significantly affected, more than the DEIS/R acknowledges. A selected list of such areas would include locations La Jolla Canyon and Valley, Boney Ridge, the "Backbone Trail," as well as Santa Monica Mountains Conservancy lands that run all along the coast from Topanga in the East to Camarillo in the West.

G434-209

**Light Pollution**

The Applicant specifies that searchlights will scan incoming tanker approaches.[285] Given the discussion regarding tanker approach routes, this means that search lights would be at times trained towards the mainland. The DEIS/R downplays what would be an annoyance to many residents in Malibu and adjacent coastlines.

G434-210

Note that several years ago, residents of western Malibu successfully petitioned to shut down a squid fishery approximately five miles offshore, due to the brightness of the lights – which must have emitted much less light than the FSRU would, as it involved only several small fishing boats. The light from the FSRU would be visible at night to many more thousands of Malibu

---

282 SB ISLAND: .90 mile profile / 38.5 mile distance = .023 apparent size factor;
FSRU: .65 mile profile / 15 mile distance = .043 apparent size factor;
Ratio of apparent profiles of FSRU and Santa Barbara Island from Pt. Dume: .043 / .023 = 1.87 (nearly double size).

283 The distance of 20 miles is measured from Mugu Rock to the center of Anacapa's visual profile; actually, distances of points on Anacapa visible from Mugu Rock range from 18.3 to 22 miles.

284 ANACAPA: .90 mile profile / 20 mile distance = .045 apparent size factor;
FSRU: .65 mile profile / 14.6 mile distance = .045 apparent size factor;
Ratio of apparent profiles of FSRU and Anacapa Island from Mugu Rock: .045 / .045 = (exactly the same size).

285 Scoping Appli., 2.5.5.6.1.



G434-207
The photographic simulations of the FSRU were prepared by a third-party consultant with expertise in constructing such models. The consultant utilized a variety of graphics/image editing software and added the 3D model of the FSRU based on the Project Applicant's engineering drawings to render a "best approximation" of the FSRU in its proposed setting.

Section 4.4.1.1 provides a description of the manner in which the offloading LNG carrier would tie up parallel to and immediately next to (side by side not end to end) the FSRU, which would have a slightly larger profile than a typical LNG carrier. At a distance of at least 12 NM (the closest point of land on the mainland), it would be difficult if not impossible to distinguish two separate vessels.

Also when one views the Channel Islands from a mainland viewpoint, one cannot see details on the islands (without a telescope or binoculars); only their profile and a somewhat mottled overall color caused by variation in the topography on the islands is visible.

G434-208
The FSRU has an overall length of 971 feet or less than 0.2 miles, not a "visible width of 2/3 mile," which equals about 3,520 feet -- a significant difference when comparing the profiles of the FSRU and Anacapa Island from a vantage point at Mugu Rock.

Standing at the base of Mugu Rock (elevation ~55' ASL), one would have a visible horizon at about 9 NM. The FSRU location is beyond that point at about 13.7 NM west-southwest of Mugu Rock, "below" the horizon. But due to the increased eye height of an observer at Mugu Rock, one would be able to see roughly the top 68 feet of the Moss tanks under clear conditions.

G434-209
La Jolla Canyon runs roughly northwest to southeast behind Mugu Peak and the associated ridge line; therefore, there would be no direct line of sight to the proposed FSRU anchorage. Atop Mugu Peak one would have a clear line of sight to the FSRU, but at a distance of slightly over 14 NM the FSRU, under typical marine meteorological conditions, would be an indistinguishable small object on the horizon. Boney Ridge in Point Mugu State Park is even more distant from the FSRU being about 4 miles east-northeast of Mugu Peak. The same is true for other Santa Monica Mountains NRA areas mentioned, all well east and north of Mugu Peak.

G434-210
Searchlights would not be "trained towards the mainland" as LNG carriers approach the port from its seaward side. The two proposed approach routes merge about 46 miles south-southeast of the FSRU.

Section 4.4.4 discuss the potential impacts of lighting on the FSRU.

residents, both west and east of Pt. Dume. (In this regard, see also "Coastal Views," below, for number of Malibu residents impacted.)

G434-210 cont'd

## CULTURAL FACTORS

The DEIS/R scarcely acknowledges that people can have strong "spiritual" connections to particular lands or waters. For many Californians who enjoy recreational boating, or hiking in the Hills east of Pt. Mugu, the region itself represents something akin to a "sacred spot." For some it is, psychologically and aesthetically, part and parcel with the CINMS. For others who don't get out on the ocean, the adjacent coast and coastal mountains – with their many state parks, beaches and other recreational areas – represent a sort of "sanctuary," a place to escape from the real and psychological stresses of urban areas. Many miles of the adjacent coast lack even small-scale commercial development (and there is none between "County Line" and Oxnard). So, the siting of an industrial facility in full view, no matter how apparently small or far away, would represent a significant degradation of the feeling of "unspoiled wilderness" one experiences in those areas.

G434-211

Also, I will note again, that naming the facility after Juan Rodríguez Cabrillo is to invoke an ominous legacy. Although he is reflexively lauded as the "discoverer" of California, he was actually a particularly callous warrior in the brutal Conquests of Cuba, Mexico, and Guatemala.[286] And several ironies should not be lost: he named these waters "the Bay of Smokes"[287] – presaging tanker emissions and visions of vapor cloud fire. And he himself was killed nearby in a maritime accident.

## SOCIOECONOMICS

4.16 PDF 760

In its discussion of socioeconomic impacts, the DEIS/R includes "multiplier effects" in its assessments of potential benefits;[288] however, it incorporates no such multiplier functions in its assessments of costs (nor does it typically use any sort of multiplier factor in its assessment of environmental impacts). But both costs and benefits can be indirect. The result is that the cost-benefit calculations are largely spurious.

G434-212

286 When Cabrillo served under Hernán Cortés in the Conquest of Tenochtitlán (Mexico City) in 1521, his primary charge was to render the bodies of slain indigenes into tallow to caulk the seams of the war parties' bergantines. I am an "armchair expert" on the life and times of Cabrillo, having researched and nearly completed a novelized historical account of his final voyage. One of the best biographies of Cabrillo is Kelsey, Harry, JUAN RODRÍGUEZ CABRILLO, Huntington Library, San Marino, 1986.

287 Technically, he gave this name to Santa Monica Bay, not the Channel Islands (nor San Pedro, as is popularly assumed). See *Id.*

288 4.16-20.



G434-211
Section 4.4.4 addresses aesthestics impacts.

G434-212
Section 4.16 contains information within the proper scope of analysis of socioeconomics required under NEPA and the CEQA.

G434-213
The estimated job creation due to the Project that is included in Section 4.16.1 which is consistent with other comparable projects.

**Few local jobs**

In many of its public statements (and in its appeal to the Governor), BHPB has emphasized "jobs" as a significant benefit to the local economy. Likewise, when Australian Consul General John Olsen spoke in the Malibu meeting of Dec. 1, he characterized job creation as one of the Project's key benefits. But the project would provide significantly fewer jobs to local citizens than BHPB and its direct supporters have stated or implied.

Statements of employment plans made in the DEIS/R include:

> "The *offshore* pipeline installation would employ up to 200 *nonlocal* workers, who would be housed on the pipe-laying barge during construction activities."[289]
>
> "Construction of the *onshore* pipeline will require approximately 200 to 240 workers for a period of eight months. The Applicant anticipates that about 15 percent of these workers will be local residents who would not relocate during pipeline construction. The remaining 85 percent would be non-local workers…"[290] For locals, that amounts to approximately 30 8-month jobs.
>
> "The anticipated construction work force for HDD is approximately 45 workers, consisting of approximately 15 percent local hires and 85 percent non-local workers."[291] This amounts to 5-6 local workers for what would be an extremely brief period (perhaps a few weeks at most).

G434-213

The upshot is that only about 8% of the construction jobs would go to locals, a total of approximately 35 jobs, none longer than 8 months, and some much shorter. Many of the workers would be imported from Australia.

Of the long-term/permanent jobs, 56 would go to non-locals (presumably mostly Australians);[292] that's out of a total of 60 ongoing jobs, onshore and offshore.[293] (The normal offshore operating crew of about 30 persons would be comprised entirely of foreign workers, rotated in two shifts.) In other words, only 4 long-term jobs would go to locals.

In sum, out of Oxnard's population of 170,000 (or out of the 300,000 combined population of Oxnard, Ventura and Malibu), a grand total of ~40 jobs would go to locals. All but 4 of them would be short term. In this light, BHPB's promotional campaign featuring "job-creation" is unconscionably disingenuous.

289 2-34.
290 4.16-2.
291 2-40.
292 4.16-3.
293 4.16-2.

### Impacts on tourism

The DEIS/R does not address any of the potential direct and indirect costs to tourism whatsoever.[294] Local tourism may account for several hundred million dollars, based on the fact that Santa Barbara, in 1995, had "County-wide total visitor expenditures…estimated at $353 million."[295] As of 1996, Coastal tourism in California generated over $30 billion annually and accounted for tens of thousands of American jobs.[296]

The economic effect on tourism, though unknown, would certainly be negative. Millions of tourists and inland residents flock to the state beaches and parks between Malibu and Ventura each year. An unassessed number of them could be deterred from visiting such places, for any number of reasons. Though their numbers might be proportionately small, they could well be numerically significant in terms of the direct and indirect dollars generated for local economies. Reduced numbers of visitors to state parks and beaches would also translate into reduced state revenues. G434-214

The DEIS/R should have included tourism impacts in its assessment of socioeconomic factors.

### Other socioeconomic impacts

With respect to commercial fisheries, the DEIS states: "The FSRU and pipeline route will traverse three CDFG (2004) catch blocks: Blocks 683, 705, and 706."[297] Yet it provides no analysis of potential impact on commercial fisheries. Moreover, were it to have done so, it would need to look also at the potential impacts on adjacent blocks; the area specified is not conservative enough. G434-215

The DEIS/R states that "the topic of how the Project would affect private party insurance rates is outside the scope of this [DEIS/R]"[298] No. Such impacts are reasonably foreseeable and potential significant, so must be addressed. (All dollars are green.) G434-216

The DEIS/R categorically dismisses the possibility that the "offshore facilities" could be "considered a factor in property values."[299] However, pristine ocean views comprise a significant part of the value of homes in Malibu and Eastern coastal Ventura County. And, in my own observation, an exceedingly disproportionate share of those protesters who've offered comments in public hearing are real estate agents. They must know what they're talking about – and they, as a group, don't tend to be environmentalists. G434-217

---

294 See 4.16-9.

295 $27 billion annually as of 1995. "The 1996 Santa Barbara County Economic Outlook," UCSB Economic Forecast Project. Volume 13. April 1996. pg. 75, cited in Testimony of Congresswoman Andrea Seastrand before the House Committee on Resources Subcommittee on Energy and Mineral Resources, July 23, 1996.

296 *Id.*

297 4.16-10.

298 4.16-1.

299 4.16-8.



G434-214
Section 4.4 discusses aesthetic impacts on tourists and other recreational users.

G434-215
Section 4.16.4 has been updated to include an updated analysis of the potential impact on commercial fishery catch blocks.

G434-216
Section 4.2.5 discusses liability and insurance issues.

G434-217
Section 4.16.1.2 contains updated information on property values.

## CUMULATIVE IMPACTS

4.20 PDF 871

The DEIS/R admits that it only considered potential cumulative impacts that were "identified at the time of publication of the Notice of Intent/Notice of Preparation (NOI/NOP) in March 2004."[300] In other words, it apparently did not consider any of the many recommendations that were made during the scoping meetings, or in subsequent communications by agency staff. G434-218

In general, the discussion takes an inappropriately narrow view of what constitutes a cumulative impact. As one example among many (and perhaps not the best example), the DEIS/R states,

> "The proposed [Sound Energy Solutions] project is not in the vicinity of the proposed Project; the only cumulative impact associated with this facility and the proposed Project would be an increase in LNG carrier traffic in the vicinity of the Port of Long Beach."[301] G434-219

But what about impacts on LNG supply and demand? Or, for instance, the availability of tugs capable of towing LNG tankers? Or the possibility that two LNG facilities in Southern California might constitute a incentive for a terrorist cell to set up shop here? These may not be the most apposite examples; but the point is that the Applicant has demonstrated an inability (or unwillingness) to consider how independent project elements might interact with each other and with other elements in the surrounding environmental, technological, socioeconomic and other contexts. G434-220

The DEIS/R does not analyze the cumulative effects of the project and all other activities on resources potentially impacted by the project over its projected 40 year life span.[302] G434-221

The DEIS/R states: "[I]f Crystal Energy's proposed DWP is approved and is constructed concurrently with the proposed Project, there would be an increase in marine traffic that could lead to a *temporary* increase in the potential for marine accidents that could then result in public injuries or fatalities."[303] But In what way could a doubling in the amount of LNG tanker traffic be considered "temporary"? G434-222

The DEIS/R, in Table 4.20-1, "Summary of Proposed and Current Projects in the Area of the Applicant's Proposed Project," provides no data whatsoever on development in Malibu. G434-223

In some cases, the Applicant seeks to have only the FSRU, or the FSRU and pipeline, considered as the basis for assessing regulatory compliance. Instead, tankers and all support vessels should always be included in any assessment, whether for air or water quality, noise, light, or whatever. Functionally, such vessels would comprise an integral part of the facility's daily operations; a tanker would be attached (moored) to the FSRU more often than not. To treat the various types G434-224

300 4.20-1.

301 4.20-3.

302 See the Point Mugu Sea Range EIS, and the Draft EIS on Delineation Drilling Activities in Federal Waters Offshore Santa Barbara County, California ( 2001) prepared by the U.S. Department of the Interiors Minerals Management Service.

303 4.20-12.



G434-218
Section 4.20 discusses the process by which projects were identified for inclusion in the cumulative effects analysis.

G434-219
The cumulative impacts analysis (Section 4.20) has been updated and revised.

G434-220
The cumulative impacts analysis has been conducted in accordance with NEPA and CEQA guidelines. See section 15130 of the State CEQA Guidelines specifically.

G434-221
The cumulative impacts analysis has been conducted to account for those projects that are reasonable and forseeable, in accordance with NEPA and CEQA guidelines. See again section 15130 of the State CEQA Guidelines.

Section 1.2 addresses the need for natural gas. Two tugboats would be dedicated to the Project; no additional tugboats would be necessary (see Section 4.3.1.3). Sections 4.2.2, 4.2.6.1, and 4.2.7.6 contain information on the potential for a terrorist attack.

G434-222
The comment refers to the discussion of the impacts on vessel traffic during construction, not during operations. Section 4.20.3.3 provides an updated cumulative vessel traffic impacts analysis.

G434-223
No part of the Project would be located in Malibu; therefore, no projects within Malibu have been included in the cumulative impacts analysis.

G434-224
The cumulative impacts analysis (Section 4.20) considers all parts of the Project for each resource, as appropriate for that resource and as required by federal and state regulations.

of hardware in a piecemeal manner would be to ignore the integrated nature of the enterprise, as well as its cumulative and synergistic effects on the environment.

G434-224 cont'd

Similarly, occasional or one-time operations, such as construction and maintenance, should be factored into total long-term, cumulative and synergistic assessments. Just because a given event or process does not occur as a part of daily operations does not mean that it can be put in a separate category with respect to overall impacts.

## NOVEL TECHNOLOGIES, UNFORESEEABLE RISKS

G434-225

BHPB plays down the experimental nature of the project, using phrases such as "based on existing technologies." Yet it has no experience with a project of this type. Of the projects it's running in roughly 90 regions on the planet, most involve mining and petroleum extraction; only one involves LNG – and that's just a typical extraction operation.[304]

BHPB's EPA Application suggests that four existing facilities have similar production and waste characteristics (see my FIGURE 10). Based on omissions and characterizations elsewhere in the application, these comparisons may be questionable. But all four of these facilities are land-based, so therefore involve significantly different design criteria.

e. Provide the name and location of any existing plant(s) which, to the best of your knowledge, resembles this production facility with respect to production processes, wastewater constituents, or wastewater treatments.

| Name | Location |
|---|---|
| Distrigas LNG Terminal | Everett, MA |
| Cove Point LNG Import Terminal | Lusby, Maryland (Calvert County) |
| CMS Trunkline LNG Company | Calcasieu Parish, Louisiana |
| Elba Island LNG Terminal | Savannah, Georgia (Chatham County) |

**Figure 10.** "Similar facilities" are all onshore, so not similar.

304 BHP Billiton Health, Safety, Environment and Community Report, 2003 (LNG is not mentioned once in the text.) http://www.bhpbilliton.com/bbContentRepository/hsecReport/bhpb_hsec_2003_full_report.pdf



G434-225
The EIS/EIR analyzes the proposed Project and its alternatives as described in Chapters 2 and 3 in accordance with applicable law. See section 15378 of the State CEQA Guidelines for the definition of "Project."

The FSRU would be fully twice the size of the largest LNG facility operating in the U.S., as shown in the following table from the CEC:[305]

G434-225 cont'd

| Facility Owner | Location | Capacity (MMcfd) |
|---|---|---|
| Southern Energy Company | Elba Island, Georgia | 430 |
| Distrigas of Massachusetts | Everett, Massachusetts | 435 |
| CMS Energy/ Trunkline | Lake Charles, Louisiana | 600 |
| Dominion Resources | Cove Point, Maryland | 750 |
| BHP BILLITON LNG | OXNARD / MALIBU | 1500 |

What novel, unknown risks might arise solely as a function of *increased scale*? Although this question has been previously raised, the DEIS/R does not address it.

Would the gas itself and the systems used to control it behave the same at all scales? How many other sea-born LNG Moss tanks of the proposed scale exist in the world? How many does BHP Billiton own and operate? (None.) How would the larger holding tanks respond to stresses? Would standard safety "relief valve" mechanisms work the same at larger scales? Would the LNG liquid body itself behave differently at large scales – for instance, in regard to "roll-over" characteristics?

As others have suggested in greater detail, all design aspects should be empirically tested with working mock-ups and physical simulations.

Also, the statutory environment regarding safety procedures may not be comprehensive enough, given that the precise combinations of technologies used in the facility would be new and relatively untested.

## MULTIPLE AND COMPOUND FAILURES

### "Unknown Unknowns"

The DEIS/R entirely ignores the possibility of simultaneous multiple and/or compound failures. These fall into the realm of "unknown unknowns;" nonetheless, some effort should have been made to assess their likely occurrence and potential impacts. Even if such hazards might be unlikely, their potential harms could be so great as to present significant risk.

G434-226

Earthquakes represent a likely cause of multiple and/or compound failure; a shock strong enough to damage one system component could foreseeably damage other components. What if, for instance, both a pipeline ruptured and the onshore flow meter were rendered inoperational? The meter on the FSRU would continue showing that gas flow through the pipeline was normal, but without the onshore meter working, there'd be no simple way to know that all of the gas was not escaping somewhere along the pipeline.

[305] CEC LNG, at 11. Billiton is not included in the original table.



G434-226
The Independent Risk Assessment (Appendix C1) addresses multiple credible scenarios, each developed in consultation with experts in public safety. Sandia National Laboratories conducted a review of the Independent Risk Assessment (see Appendix C2).

What if a nearshore section of the pipeline were damaged in an earthquake or by some other stress event, a gas cloud began to form, and a spark ignited, perhaps by a passing motorboat? In addition to possible loss of life aboard the boat, is there any scenario by which a fireball might reach on-shore structures?

If the FSRU were to drift, and then an explosion occurred closer to shore, how many homes and lives would be lost?

Faced with this gaping chasm of uncertainty, reviewers of the Application should be wary of being unduly impressed by the company's *soi-disant* "experience." Even BHPB itself can be heard questioning its ability to manage a project like this one. The CEO of its Australian parent-company, Chip Goodyear, was recently interviewed about the 17 worker deaths the company has had in the past year. He confessed that, "until we get health, safety and environment right, we're not going to be a first-class organization."[306]

G434-226 cont'd

**The Precautionary Principle**

In attributing weight to the various risks, agency reviewers are faced with comparisons of "apples and asteroids." For instance, how does one weigh the possibility of cataclysm against the apparently low likelihood of its occurrence? And how does one weigh a small, nearly negligible risk against the great likelihood that it will effect widespread ecological or human populations?

G434-227

As a threshold consideration, all such risks must be placed within the real context of the increasing degradation of the regional environment. A recent Director of the NOAA Office of Ocean and Coastal Resource Management states the context succinctly: "As a consequence of the accelerating pressure on coastal areas and near shore ecosystems, we are seeing a widespread and growing decline in the overall health, and ecological and economic viability of coastal marine habitats and the species and human uses they support."[307] In this light, reviewers should give added weight to options and outcomes that favor preservation.

In that regard, whenever subjective determinations must be made, the reviewers should apply *the Precautionary Principle*. This "better safe than sorry" approach is already embodied in the legal language of NEPA, the Endangered Species Act, FIFRA, and other laws.[308] In practice this means, for instance, that the absence or insufficiency of data should not be construed as an absence of effect (absence of evidence is not evidence of absence). In cases of insufficient data, the reasonable worst-case scenario must be assumed.

G434-227.1

306 ABC online, August [28] 2004.

307 Prepared Statement of Jeffrey R. Benoit, Director, Office of Ocean And Coastal Resource Management, National Ocean Service, NOAA, U.S. Department of Commerce, Before The House Resources Committee Subcommittee on Fisheries, Wildlife and Oceans, March 21, 1996.

308 E.g., the Convention on the International Trade of Endangered Species, the Montreal Protocols on the Reduction of Atmospheric Chloroflourocarbons, etc. *See* Daniel Bodansky, *the Precautionary Principle in National Environmental Law.*



G434-227
Based on state and Federal law, the EIS/EIR was conducted to NEPA and CEQA guidelines. All applicable and relevant laws and regulations were taken into consideration.

With respect to the sufficiency of data, NEPA and the CEQA do not dictate an amount of information to be provided but rather prescribe a level of treatment, which may in turn require varying amounts of information to enable reviewers and decision-makers to evaluate and compare alternatives. The information must be sufficient to permit decision-makers to make a reasoned choice of alternatives with respect to their environmental impacts. Decision-makers have discretion in this matter.

G434-227.1
See the response to Comment G434-227.

## CONCLUSION

While based on many existing technologies, the FSRU and related elements (e.g., PLEM, risers and pipelines) represent entirely novel combinations and applications of such technologies. No codes or standards are yet devised to address many of the proposed interactions of technology. The Project would be experimental. In addition, the DEIS/R omits a substantial amount of significant data, and it misrepresents other data, in one way or another (for whatever reasons). As a result, many significant foreseeable risks remain unmitigated or unmitigable. G434-228 G434-229

What is certain is that the Project would present both known and unknown potentials for substantial harm to life and environment, and would be situated such that many of these harms could be significant despite the *apparently* low probabilities associated with them. Due to its proximity to protected sanctuaries and similarly ecologically-sensitive areas, and to the presence of endangered species in the Project area, there is just simply too much possibility that *unanticipated* significant risks would arise.

At the same time, the Applicant has not fulfilled the CEQA criteria of providing sufficiently *substantial evidence* that the *specific economic, legal, social, technological, or other benefits would outweigh the adverse environmental impacts.*[309] The discussion of benefits is vague and often unsubstantiated, whereas there are numerous significant adverse impacts which remain unacknowledged, unassessed, unmitigable and/or simply unknown. Thus, the Application does not meet the threshold of being able to obtain a statement of overriding considerations from the CSLC. G434-230

Therefore, the "No-Action Alternative" is the only viable option. The Applicant has provided no reasonable argument not to exercise it. The Project should be shelved, at least until a more *demand-driven* policy is implemented. The Citizens of California deserve no less.

[309] As per CEQA Guidelines §15093(a) and (b).



G434-228
Section 2.1 contains information on design criteria and specifications, final design requirements, and regulations governing the construction of the FSRU. The Cabrillo Port must be designed in accordance with applicable standards, and the U.S. Coast Guard has final approval. Section 4.2.4 contains information on Federal and State agency jurisdiction and cooperation. The Deepwater Port Act specifies regulations that all deepwater ports must meet; Section 4.2.7.3 contains information on design and safety standards for the deepwater port. Section 4.2.8.2 contains information on pipeline safety and inspections. Impact EJ-1 in Section 4.19.4 addresses additional pipeline design requirements in areas of low-income and minority communities. The EIS/EIR's analyses have been developed with consideration of these factors and regulations and in full conformance with the requirements of NEPA and the CEQA.

G434-229
The Final EIS/EIR contains data that became available after the publication of the October 2004 Draft EIS/EIR. In addition, Appendices C1 and C2 contain the revised Independent Risk Assessment and the review of it by Sandia National Laboratory. The Final EIS/EIR analyzes foreseeable risks and proposes mitigation measures, accordingly.

G434-230
The CSLC would make this determination, based on substantial evidence in the record, before it could approve the proposed Project.

## REFERENCES

*1996 Santa Barbara County Economic Outlook*, UCSB Economic Forecast Project. Vol 13. April 1996, at 75, cited in Testimony of Congresswoman Andrea Seastrand before the House Committee on Resources Subcommittee on Energy and Mineral Resources, July 23, 1996. ("Seastrand").

Beachy, Debra, *BHP eyes LNG plant off Southern California coast*, Petroleum News, Vol. 8, No. 34, Aug. 2003, http://www.petroleumnews.com/pnarch/030824-25.html (petro industry take on BHP's proposal).

Benoit, Jeffrey R., Prepared Statement of Jeffrey R. Benoit, Director, Office of Ocean And Coastal Resource Management, National Ocean Service, NOAA, Before The House Resources Committee Subcommittee on Fisheries, Wildlife and Oceans, March 21, 1996.

BHP Billiton, Inc., Cabrillo Port Application for Deepwater Port License. http://dmses.dot.gov/docimages/pdf88/265927_web.pdf (and other associated documents).

BHP Billiton's maps at:
http://www.cabrilloport.ene.com/files/001883.CA04.01.01.a.pdf (with alternative sites)
http://dmses.dot.gov/docimages/pdf88/265928_web.pdf (close view)
http://dmses.dot.gov/docimages/p77/265982.pdf (wide view)

BHP Billiton Cabrillo Port APPLICATION AND PUBLIC COMMENTS – Federal Docket: http://dms.dot.gov/search/ (search on "16877")

BHP Billiton Health, Safety, Environment and Community Report, 2003 http://www.bhpbilliton.com/bbContentRepository/hsecReport/bhpb_hsec_2003_full_report.pdf

Blackburn, Thomas C., DECEMBER'S CHILD, A BOOK OF CHUMASH ORAL NARRATIVES, University of California Press, 1975.

Bodansky, Daniel, *the Precautionary Principle in National Environmental Law*, [FULL CITE; ca. 1994].

Bradley, Bill, *Kissing Up to Arnold: A blatant picture of influence peddling in the Governor's Office*, LA Weekly (Dec. 2004) http://www.laweekly.com/ink/05/04/news-bradley.php

California Energy Commission, "Integrated Energy Policy Report," Sacramento, CA: Oct. 2003 http://www.energy.ca.gov/energypolicy.

California Energy Commission, "Liquefied Natural Gas in California: History, Risks, and Siting, JULY 2003," 700-03-005. ("CEC LNG").

California Energy Commission, "Preliminary Natural Gas Market Assessment," May 27, 2003 100-03-006SR. http://dmses.dot.gov/docimages/pdf88/266013_web.pdf ("CEC Market")

*California's Pacific Pipeline wins key approvals*, Oil & Gas Journal, July 15, 1996, at 20.

Carroll, James V., *A New Course for the Panama Canal*, Navy League of the United States website: http://www.navyleague.org/seapower/a_new_course_for_the_panama_cana.htm

Clark, Woodrow, *Forget About Liquefied Natural Gas: We Need Diverse Clean Energy Now*, The Electricity Journal, Oct. 2004.

CRS Report for Congress, Order Code RS21079, Updated July 19, 2002 Maritime Security: Overview of Issues, John Frittelli, Transportation Analyst, Resources, Science, and Industry Division.

Dailey, Murray D., et al, eds., ECOLOGY OF THE SOUTHERN CALIFORNIA BIGHT: A SYNTHESIS AND INTERPRETATION, University of California Press, 1993.

THE DEEPWATER PORT ACT, as amended 33 U.S.C. 1501-1524 & 33 CFR Parts 148, 149, and 150 (statutory authority).

Gurnon, Emily and Deborah Schoch, *Firm Cancels LNG Facility: Community opposition causes Calpine to withdraw its plans for a natural gas terminal on Humboldt Bay*, LA Times, March 18, 2004. http://www.latimes.com/news/local/la-me-eureka18mar18,1,3924354.print.story

http://www.timrileylaw.com/LNG.htm (history of LNG accidents and cataclysmic hazards).

King, Chester, Prehistoric Native American Cultural Sites in the Santa Monica Mountains, National Park Service, Western Region, 1994 (funded under Cooperative Agreement No. 8000-2-9008).

Malibu Marine Refuge proposal, State bill, SB 1006, 1997.

Martin, Glenn, *Marine Group Rips Oil Tanker Report But Coast Guard refutes charge spill danger ignored*, The San Francisco Chronicle, May 27, 1996, at A11.

Mitchell, J.E., *Exxon Agrees To Halt Shipping Near Islands; Environment: Oil Company Says It Will Comply With Cease-And-Desist Order*, Los Angeles Times, April 8, 1995, at B1.

National Research Council, OCEAN NOISE AND MARINE MAMMALS. Committee on Potential Impacts of Ambient Noise in the Ocean on Marine Mammals, Ocean Studies Board, Division on Earth and Life Studies (The National Academies Press, Washington, D.C., .2003)

Natural Resources Defense Council, Harboring Pollution: The Dirty Truth About U.S. Ports, March, 2004. http://www.nrdc.org/air/pollution/ports/ports.pdf (NRDC).

OECD, The Environmental Effects of Freight, 1997.

*Pacific Blues* (multi-part series on environmental problems of California waters) in Sacramento Bee, Dec. 1996.

Panama Canal Handbook, http://www.shipsagent.com/panama-canal-info.html

Reed, Mack, *Experts Say Area Ill-Prepared For Quake; Emergencies: Scientists Also Warn That Local Faults Are Capable of Shaking Ventura County as Hard as the Northridge Temblor Shook the San Fernando Valley -- or Harder*, Los Angeles Times, January 29, 1995, Ventura Ed., B1.

Robertson, et al, *Monitoring the Coastal Environment: NOAA's State of the Coast Report*. Silver Spring, MD: NOAA. (Andrew Robertson, Paul Orlando, and Donna Turgeon). http://state_of_coast.noaa.gov/bulletins/html/mcwq_12/mcwq.html

Santa Barbara County Air Pollution Control District, *The Need to Reduce Marine Shipping Emissions: A Santa Barbara County Case Study*, Paper # 70055, 2003 (APCD).

Sorlien, et al, *Structure and kinematics along the thrust front of the Transverse Ranges: 3D digital mapping of active faults in Santa Monica Bay using reflection, well, and earthquake data: Collaborative research with University of California, Santa Barbara and Columbia University.* USDI/USGS 02HQGR0013 (UCSB) Christopher C. and Marc J. Kamerling, Institute for Crustal Studies, University of California, Santa Barbara. Leonardo Seeber, Lamont-Doherty Earth Observatory, Columbia University. Research supported by USGS, DOI, under USGS award number 02HQGR0013. http://erp-web.er.usgs.gov/reports/annsum/vol44/sc/02HQGR0013.htm (for quake fault map).

Stavro, Barry, *Dismantling of Oil Rigs Marks Change*, Los Angeles Times, February 21, 1996, at A3.

Tegner, Mia, *Overfishing has put prized abalone at serious risk*, The San Diego Union-Tribune, July 24, 1996.

Weiss, Kenneth R., *Navy Cleaning Up Toxic Trash On Island; Waste: The Site, 60 Miles Off Point Mugu, Is Among Military Installations Nationwide That Bear The Scars Of Decades Of Hazardous Dumping*, Los Angeles Times, Jan. 29, 1996, at B1

West Coast Offshore Vessel Traffic Risk Management Project Final Report 7/2002 ("Working Group"). http://www.oilspilltaskforce.org/docs/vessel_traffic/2002_Final_Report.pdf

## ADDITIONAL ONLINE RESOURCES

Coalition for Clean Air (information on air pollution health risks):
http://www.coalitionforcleanair.org/cca/

Environment Now (based in Santa Barbara):
http://www.environmentnow.org/contact.html

Global Oil (one of BHP Billiton's many (related) subsidiaries):
http://globalOil.bhpbilliton.com/

National Marine Sanctuary Foundation:
http://www.nmsfocean.org/

Natural Resources Defense Council
http://www.nrdc.org/

Port of Los Angeles (re. Vessel Traffic, Rescue tugboats):
http://www.portoflosangeles.org/